International Journal of

HEAT and MASS TRANSFER

Editors

E. HAHNE, J. P. HARTNETT, M. LEBOUCHE,
A. I. LEONTIEV, A. MAJUMDAR, O. G. MARTYNENKO,
W. J. MINKOWYCZ, X. F. PENG, J. W. ROSE, K. SUZUKI

VOLUME CONTENTS AND AUTHOR INDEX
VOLUME 46, 2003

PERGAMON

INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER

AIMS AND SCOPE OF THE JOURNAL

The *International Journal of Heat and Mass Transfer* seeks to provide a central vehicle for exchange of basic ideas in heat and/or mass transfer between research workers and engineers located throughout the world. Only those papers that convey original unpublished research of permanent interest—analytical, numerical and/or experimental—and featuring explicitly heat and/or mass transfer, will be accepted for publication. In all cases, the highest priority will be given to those contributions which increase our basic understanding of transfer processes and of their application to engineering problems.

As a service to the readers, an international bibliography of recent papers in heat and mass transfer listed by title, author and source appears regularly in the *International Journal.* Reviews of new books on heat and mass transfer are also published in the journal.

Technical notes may also be submitted. In some cases, an alternate route for a much faster publication of a technical note or a short paper may be the *International Communications in Heat and Mass Transfer* journal. This companion journal, published by Elsevier Inc. with the same Board of Editors, serves as a world forum for the rapid dissemination of new ideas, new measurement techniques, preliminary findings of ongoing investigations, discussions, and criticisms in the field of heat and mass transfer.

BOARD OF EDITORS

A. R. BALAKRISHNAN (Associate Editor for India)
Department of Chemical Engineering
Indian Institute of Technology
Madras 600 036, India

A. BRIGGS (Associate Editor)
Department of Engineering
Queen Mary and Westfield College
University of London
London El 4NS, U.K.

C. P. GRIGOROPOULOS (Associate Editor)
Department of Mechanical Engineering
University of California
6189 Etcheverry Hall
Berkeley, CA 94720-1740, U.S.A.

E. HAHNE
Institut für Thermodynamik und Wärmetechnik
Universität Stuttgart
Pfaffenwaldring 6
D-70550 Stuttgart, Germany

J. P. HARTNETT (Coordinating Editor)
Energy Resources Center
University of Illinois at Chicago
851 South Morgan Street, MC 156
Chicago, IL 60607-7054, U.S.A.

M. LEBOUCHE
Laboratoire d'Energétique et de Mécanique Théorique et Appliquée
CNRS URA 875
2. Avenue de la Forêt de Haye
BP 160, 54504 Vandoeuvre-lés-Nancy
Cedex, France

A. I. LEONTIEV
Russian Academy of Sciences
17A Krasnokazarmennaya Str.
IVT RAN, NCHMT
Moscow 111250, Russia

A. MAJUMDAR
Department of Mechanical Engineering
University of California
Berkeley, CA 94720-1740, U.S.A.

O. G. MARTYNENKO
Heat and Mass Transfer Institute
Byelorussian Academy of Sciences
25 Podlesnaya, Minsk, Belarus

W. J. MINKOWYCZ (Coordinating Editor)
Mechanical Engineering (M/C 251)
University of Illinois at Chicago
842 West Taylor Street, 2049 ERF
Chicago, IL 60607-7022, U.S.A.

S. NISHIO (Associate Editor)
Institute of Industrial Science
University of Tokyo
4-6-1 Komaba, Meguro-ku
Tokyo 153-8505, Japan

X. F. PENG
Thermal Engineering Department
Tsinghua University
Beijing 100084, China

J. W. ROSE
Department of Engineering
Queen Mary and Westfield College
University of London
London El 4NS, U.K.

K. SPINDLER (Associate Editor)
Institut für Thermodynamik und Wärmetechnik
Universität Stuttgart
Pfaffenwaldring 6
D-70550 Stuttgart, Germany

K. SUZUKI
Department of Machine and Control Systems
Shibaura Institute of Technology
307 Fukasaku, Saitama 337-8570, Japan

J. TAINE (Associate Editor)
Laboratoire EM2C
École Centrale Paris
92292 Châtenay-Malabry Cedex
France

X. X. ZHANG (Associate Editor)
School of Mechanical Engineering
University of Science & Technology Beijing
Beijing 100083, China

HONORARY EDITORIAL ADVISORY BOARD

Co-Chairmen: E. R. G. ECKERT, *University of Minnesota, Minneapolis, MN* 55455, *U.S.A.*
U. GRIGULL, *Technische Universität, München, Germany*
Past-Chairman: OWEN SAUNDERS, F.R.S., *Imperial College, London, U.K.*
Founding Editors: C. GAZLEY JR., *The RAND Corporation, Santa Monica, California, U.S.A.*
D. B. SPALDING, *Imperial College, London, U.K.*

F. ARINÇ, *Ankara, Turkey*
J. P. BARDON, *Nantes, France*
F. J. BAYLEY, *Brighton, U.K.*
A. BEJAN, *Durham, NC, U.S.A.*
A. E. BERGLES, *Troy, NY, U.S.A.*
C.-K. CHEN, *Tainan, Taiwan, R.O.C.*
P. CHENG, *Kowloon, Hong Kong*
Y. I. CHO, *Philadelphia, PA, U.S.A.*
M. COMBARNOUS, *Talence, France*
K. CORNWELL, *Edinburgh, U.K.*
R. COTTA, *Rio de Janeiro, Brazil*
M. CUMO, *Rome, Italy*
J. J. DELGADO DOMINGOS, *Lisbon, Portugal*
J. M. DELHAYE, *Clemson, SC, U.S.A.*
A. A. DOLINSKY, *Kiev, Ukraine*
R. ECHIGO, *Tokyo, Japan*
A. FAGHRI, *Storrs, CT, U.S.A.*
V. FUJITA, *Fukuoka, Japan*
R. I. GOLDSTEIN, *Minneapolis, MN, U.S.A.*
R. GREIF, *Berkeley, CA, U.S.A.*
K. HANJALIC, *Delft, The Netherlands*
G. F. HEWITT, *London, U.K.*
J. R. HOWELL, *Austin, TX, U.S.A.*
D. B. INGHAM, *Leeds, U.K.*
Y. JALURIA, *Piscataway, NJ, U.S.A.*
S. KAKAC, *Ankara, Turkey*
M. KAVIANY, *Ann Arbor, MI, U.S.A.*
R. T. LAHEY, *Troy, NY, U.S.A.*
E. LEONARDI, *Sydney, Australia*
F. MAYINGER, *Munich, Germany*
B. B. MIKIC, *Cambridge, MA, U.S.A.*
V. E. NAKORYAKOV, *Novosibirsk, Russia*
R. I. NIGMATULIN, *Ufa, Russia*
F. OGINO, *Kyoto, Japan*
R. POHORECKI, *Warsaw, Poland*
I. POP, *Cluj, Romania*
U. RENZ, *Aachen, Germany*
J. F. RICHARDSON, *Swansea, U.K.*
S. T. RO, *Seoul, Korea*
W. ROETZEL, *Hamburg, Germany*
J. F. SACADURA, *Villeurbanne, France*
R. K. SHAH, *E. Amherst, KY, U.S.A.*
M. SHOJI, *Tokyo, Japan*
S. SIDEMAN, *Haifa, Israel*
H. SIMPSON, *Glasgow, U.K.*
E. M. SPARROW, *Minneapolis, MN, U.S.A.*
K. STEPHAN, *Stuttgart, Germany*
K. VAFAI, *Columbus, OH, U.S.A.*
M. G. VELARDE, *Madrid, Spain*
R. VISKANTA, *West Lafayette, IN, U.S.A.*
D. VORTMEYER, *Munich, Germany*
B. X. WANG, *Beijing, China*
D. R. WEBB, *Manchester, U.K.*
W. M. WOREK, *Chicago, IL, U.S.A.*
K. T. YANG, *Notre Dame, IN, U.S.A.*
H. YOSHIDA, *Kyoto, Japan*

VOLUME CONTENTS

January, Number 1

	1	Publisher's Announcement
K. Suzuki and S. Nishio	3	Heat transfer bibliography—Japanese works 1999
X. Jin, L. Li and Y. Zhang	15	A heat transfer model for deep penetration laser welding based on an actual keyhole
K. N. Rainey, S. M. You and S. Lee	23	Effect of pressure, subcooling, and dissolved gas on pool boiling heat transfer from microporous, square pin-finned surfaces in FC-72
B. Li, P. C. Clapp, J. A. Rifkin and X. M. Zhang	37	Molecular dynamics calculation of heat dissipation during sliding friction
X. Wang and X. Xu	45	Molecular dynamics simulation of thermal and thermomechanical phenomena in picosecond laser material interaction
J.-R. Ho, C.-P. Kuo and W.-S. Jiaung	55	Study of heat transfer in multilayered structure within the framework of dual-phase-lag heat conduction model using lattice Boltzmann method
N. S. Winaya, P. Basu and B. V. Reddy	71	Experimental investigations on heat transfer from suspension to impact separators in the riser column of a circulating fluidized bed combustor
F. Mashayek, N. Ashgriz, W. J. Minkowycz and B. Shotorban	77	Coalescence collision of liquid drops
L. Z. Zhang and J. L. Niu	91	Laminar fluid flow and mass transfer in a standard field and laboratory emission cell
C.-H. Cheng and M.-H. Chang	101	Shape design for a cylinder with uniform temperature distribution on the outer surface by inverse heat transfer method
L. L. Dong, C. W. Leung and C. S. Cheung	113	Heat transfer of a row of three butane/air flame jets impinging on a flat plate
S. K. W. Tou and X. F. Zhang	127	Three-dimensional numerical simulation of natural convection in an inclined liquid-filled enclosure with an array of discrete heaters
B. A. Gabaraev, S. A. Kovalev, Yu. S. Molochnikov, S. L. Soloviev and S. V. Usatikov	139	Boiling curve in temperature wave region
Z.-Y. Guo and Z.-X. Li	149	Size effect on microscale single-phase flow and heat transfer

K. SUGA 161 Predicting turbulence and heat transfer in 3-D curved ducts by near-wall second moment closures

Technical Notes

K. M. KWAK, K. TORII and K. NISHINO 175 Heat transfer and pressure loss penalty for the number of tube rows of staggered finned-tube bundles with a single transverse row of winglets

L. H. LIU, L. M. RUAN and H. P. TAN 181 On the treatment of open boundary condition for radiative transfer equation

Letter to the Editors

V. A. F. COSTA 185 Comment on the paper by Qi-Hong Deng, Guang-Fa Tang, "Numerical visualization of mass and heat transport for conjugate natural convection/heat conduction by streamline and heatline" IJHMT 45 (11) (2002) 2373–2385

Q.-H. DENG 187 Reply to V.A.F. Costa's comment

Book Review

H. PEERHOSSAINI 189 'Hydrodynamique physique' by E. Guyon, J.P. Hulin, L. Petit, EDP Sciences, 2002, 674 pp., 53.35 Euros, paperback, ISBN 2-86883-502-3

January, Number 2

K. SUZUKI and S. NISHIO 193 Heat transfer bibliography—Japanese works 2000

D. MIKIELEWICZ 207 Hydrodynamics and heat transfer in bubbly flow in the turbulent boundary layer

C. H. N. YUEN and R. F. MARTINEZ-BOTAS 221 Film cooling characteristics of a single round hole at various streamwise angles in a crossflow. Part I: effectiveness

C. H. N. YUEN and R. F. MARTINEZ-BOTAS 237 Film cooling characteristics of a single round hole at various streamwise angles in a crossflow. Part II: heat transfer coefficients

T. H. PARK, H. G. CHOI, J. Y. YOO and S. J. KIM 251 Streamline upwind numerical simulation of two-dimensional confined impinging slot jets

M. RAHIMI, I. OWEN and J. MISTRY 263 Impingement heat transfer in an under-expanded axisymmetric air jet

B. DAWOUD and Y. ARISTOV 273 Experimental study on the kinetics of water vapor sorption on selective water sorbents, silica gel and alumina under typical operating conditions of sorption heat pumps

G. GOGOS, S. SOH and D. N. POPE 283 Effects of gravity and ambient pressure on liquid fuel droplet evaporation

Q. WANG, H. YOO and Y. JALURIA — 297 — Convection in a horizontal rectangular duct under constant and variable property formulations

S.-S. HOU — 311 — The interaction between internal heat loss and external heat loss on the extinction of stretched spray flames with nonunity Lewis number

A. MAHIDJIBA, L. ROBILLARD and P. VASSEUR — 323 — Linear stability of cold water layer saturating an anisotropic porous medium—effect of confinement

M. A. AL-NIMR, M. HADER and M. NAJI — 333 — Use of the microscopic parabolic heat conduction model in place of the macroscopic model validation criterion under harmonic boundary heating

M.-C. DULUC, S. XIN and P. L. QUÉRÉ — 341 — Transient natural convection and conjugate transients around a line heat source

S. HÉAS, H. ROBIDOU, M. RAYNAUD and M. LALLEMAND — 355 — Onset of transient nucleate boiling from a thick flat sample

A. YOUNES — 367 — On modelling the multidimensional coupled fluid flow and heat or mass transport in porous media

Technical Note

J.-S. YOO — 381 — Thermal convection in a vertical porous slot with spatially periodic boundary temperatures: low *Ra* flow

January, Number 3

T. GAMBARYAN-ROISMAN, M. SHAPIRO, E. LITOVSKY and A. SHAVIT — 385 — Influence of gas emission on heat transfer in porous ceramics

S. W. KIM, J. Y. AHN, S. D. KIM and D. H. LEE — 399 — Heat transfer and bubble characteristics in a fluidized bed with immersed horizontal tube bundle

S. ROY and P. PATEL — 411 — Study of heat transfer for a pair of rectangular jets impinging on an inclined surface

T. HIBIKI, R. SITU, Y. MI and M. ISHII — 427 — Experimental study on interfacial area transport in vertical upward bubbly two-phase flow in an annulus

N. C. DEJONG and A. M. JACOBI — 443 — Localized flow and heat transfer interactions in louvered-fin arrays

K. UCHIYAMA, H. MIGITA, R. OHMURA and Y. H. MORI — 457 — Gas absorption into "string-of-beads" liquid flow with chemical reaction: application to carbon dioxide separation

B. Merci and E. Dick	469	Heat transfer predictions with a cubic k–ε model for axisymmetric turbulent jets impinging onto a flat plate
P. R. Chandra, C. R. Alexander and J. C. Han	481	Heat transfer and friction behaviors in rectangular channels with varying number of ribbed walls
S. Kazansky, V. Dubovsky, G. Ziskind and R. Letan	497	Chimney-enhanced natural convection from a vertical plate: experiments and numerical simulations
L. Zhang and M. Shoji	513	Nucleation site interaction in pool boiling on the artificial surface
J. S. Hammonds Jr. and M. A. Shannon	523	The effect of laser light propagation through a self-induced inhomogeneous process gas on temperature dependent laser-assisted chemical etching
S. Haferl and D. Poulikakos	535	Experimental investigation of the transient impact fluid dynamics and solidification of a molten microdroplet pile-up
A. Barletta and E. Zanchini	551	Time-periodic laminar mixed convection in an inclined channel
B. Bourouga, V. Goizet and J. P. Bardon	565	Modèle predictif de résistance thermique de contact dynamique adapté au cas de l'interface pièce–outil de forgeage

February, Number 4

W. J. Sheu and C. J. Sun	577	Transient behaviors of ignition of premixed stagnation-point flows with catalytic reactions
R. Khatyr, D. Ouldhadda and A. Il Idrissi	589	Viscous dissipation effects on the asymptotic behaviour of laminar forced convection for Bingham plastics in circular ducts
M. S. Darwish and F. Moukalled	599	TVD schemes for unstructured grids
T. Yang and L. Wang	613	Bifurcation and stability of combined free and forced convection in rotating curved ducts of square cross-section
A.-R. A. Khaled and K. Vafai	631	Analysis of flow and heat transfer inside oscillatory squeezed thin films subject to a varying clearance
D. A. Nield, A. V. Kuznetsov and M. Xiong	643	Thermally developing forced convection in a porous medium: parallel plate channel with walls at uniform temperature, with axial conduction and viscous dissipation effects
L. Al-Hadhrami and J.-C. Han	653	Effect of rotation on heat transfer in two-pass square channels with five different orientations of 45° angled rib turbulators

J.-M. TOURNIER and M. S. EL-GENK 671 Startup of a horizontal lithium–molybdenum heat pipe from a frozen state

O. GUVEN and Y. BAYAZITOGLU 687 The radiative transfer solution of a rectangular enclosure using angular domain discrete wavelets

C.-S. CHEN and C.-F. CHOU 695 Analytical and numerical studies on viscous energy dissipation in laterally driven microcomb structures

X. LUO, X. GUAN, M. LI and W. ROETZEL 705 Dynamic behaviour of one-dimensional flow multistream heat exchangers and their networks

R. BROCKMANN, K. DICKMANN, P. GESHEV and K.-J. MATTHES 717 Calculation of temperature field in a thin moving sheet heated with laser beam

A. PANTOKRATORAS 725 Laminar free-convection in water with variable physical properties adjacent to a vertical plate with uniform heat flux

H.-P. TAN, J.-F. LUO, X.-L. XIA and Q.-Z. YU 731 Transient coupled heat transfer in multilayer composite with one specular boundary coated

H. GAO, H.-Y. GU and L.-J. GUO 749 Numerical study of stratified oil–water two-phase turbulent flow in a horizontal tube

Technical Note

C.-C. WANG, I. Y. CHEN and H.-J. SHYU 755 Frictional performance of R-22 and R-410A inside a 5.0 mm wavy diameter tube

February, Number 5

C. K. KRISHNAPRAKAS and K. BADARI NARAYANA 761 Heat transfer analysis of mutually irradiating fins

Y.-T. YANG and C.-Z. HWANG 771 Calculation of turbulent flow and heat transfer in a porous-baffled channel

G. DEGAN and P. VASSEUR 781 Influence of anisotropy on convection in porous media with nonuniform thermal gradient

H. GUNES and A. LIAKOPOULOS 791 Three-dimensional convective cooling in a vertical channel with flush-mounted heat sources

J. YUAN, M. ROKNI and B. SUNDÉN 809 Three-dimensional computational analysis of gas and heat transport phenomena in ducts relevant for anode-supported solid oxide fuel cells

S.-S. HSIEH, F.-Y. WU and H.-H. TSAI 823 Turbulent heat transfer and flow characteristics in a horizontal circular tube with strip-type inserts. Part I. Fluid mechanics

S.-S. Hsieh, M.-H. Liu and H.-H. Tsai — 837 — Turbulent heat transfer and flow characteristics in a horizontal circular tube with strip-type inserts. Part II. Heat transfer

S. K. Das, N. Putra and W. Roetzel — 851 — Pool boiling characteristics of nano-fluids

H. Wang, X. F. Peng, B. X. Wang and D. J. Lee — 863 — Bubble sweeping and jet flows during nucleate boiling of subcooled liquids

W.-M. Yan, H.-Y. Li, Y.-J. Wu, J.-Y. Lin and W.-R. Chang — 871 — Performance of finned tube heat exchangers operating under frosting conditions

Q. Chen, Y. Li and J. P. Longtin — 879 — Real-time laser-based measurement of interface temperature during droplet impingement on a cold surface

S. Ray and A. W. Date — 889 — Friction and heat transfer characteristics of flow through square duct with twisted tape insert

T. Okawa, T. Tanaka, I. Kataoka and M. Mori — 903 — Temperature effect on single bubble rise characteristics in stagnant distilled water

A. I. Fedorchenko and A. A. Chernov — 915 — Exact solution of the problem of gas segregation in the process of crystallization

A. I. Fedorchenko and A. A. Chernov — 921 — Simulation of the microstructure of a thin metal layer quenched from a liquid state

Technical Notes

R. Cai and N. Zhang — 931 — Explicit analytical solutions of 2-D laminar natural convection

H. Herwig and O. Hausner — 935 — Critical view on "new results in micro-fluid mechanics": an example

March, Number 6

S. S. Motsa and P. Sibanda — 939 — On the stability analysis of thermally stratified channel flow with a compliant boundary

F. Contarin, A. V. Saveliev, A. A. Fridman and L. A. Kennedy — 949 — A reciprocal flow filtration combustor with embedded heat exchangers: numerical study

J.-C. Lin, S.-S. Hou and T.-H. Lin — 963 — A theoretical study on Bunsen spray flames

Y. Jiang and Q. Chen — 973 — Buoyancy-driven single-sided natural ventilation in buildings with large openings

X. Qin, R. E. Khayat and K. T. Nguyen — 989 — Transient non-isothermal behavior during the growth and collapse of spherical fluid shells

M. Y. Gokhale and F. M. Al Samman — 999 — Effects of mass transfer on the transient free convection flow of a dissipative fluid along a semi-infinite vertical plate with constant heat flux

C.-H. Huang and C.-Y. Yeh — 1013 — An optimal control algorithm for entrance concurrent flow problems

A. Pacheco-Vega, M. Sen and K. T. Yang — 1029 — Simultaneous determination of in- and over-tube heat transfer correlations in heat exchangers by global regression

H.-Y. Li and W.-M. Yan — 1041 — Identification of wall heat flux for turbulent forced convection by inverse analysis

D.-H. Rhee, P.-H. Yoon and H. H. Cho — 1049 — Local heat/mass transfer and flow characteristics of array impinging jets with effusion holes ejecting spent air

Y. Mito and T. J. Hanratty — 1063 — Lagrangian stochastic simulation of turbulent dispersion of heat markers in a channel flow

J.-H. Jang, W.-M. Yan and H.-C. Liu — 1075 — Natural convection heat and mass transfer along a vertical wavy surface

M. Khalid Usmani, M. Autamush Siddiqui, S. S. Alam, A. M. Jairajpuri and M. Kamil — 1085 — Heat transfer studies during natural convection boiling in an internally heated annulus

D. A. S. Rees and I. Pop — 1097 — The effect of large-amplitude g-jitter vertical free convection boundary-layer flow in porous media

A. V. Gusarov, T. Laoui, L. Froyen and V. I. Titov — 1103 — Contact thermal conductivity of a powder bed in selective laser sintering

Letter to the Editors

R. L. Webb and J. W. Paek — 1111 — Discussion of "Evaporation heat transfer and pressure drop of refrigerant 134A in a small pipe." Int. J. Heat Mass Transfer, Vol. 41, pp. 4183–4194, 1998

Y.-Y. Yan and T.-F. Lin — 1112 — Reply to Prof. R.L. Webb's and Dr. J.N. Paek's comments

March, Number 7

S. Chakraborty, N. Chakraborty, P. Kumar and P. Dutta — 1115 — Studies on turbulent momentum, heat and species transport during binary alloy solidification in a top-cooled rectangular cavity

G. Scalabrin and L. Piazza — 1139 — Analysis of forced convection heat transfer to supercritical carbon dioxide inside tubes using neural networks

G. Xu, M. Ikegami, S. Honma, K. Ikeda, X. Ma, H. Nagaishi, D. L. Dietrich and P. M. Struk	1155	Inverse influence of initial diameter on droplet burning rate in cold and hot ambiences: a thermal action of flame in balance with heat loss
M. Kureta, T. Hibiki, K. Mishima and H. Akimoto	1171	Study on point of net vapor generation by neutron radiography in subcooled boiling flow along narrow rectangular channels with short heated length
C. Lei and J. C. Patterson	1183	A direct three-dimensional simulation of radiation-induced natural convection in a shallow wedge
J. P. Hindmarsh, A. B. Russell and X. D. Chen	1199	Experimental and numerical analysis of the temperature transition of a suspended freezing water droplet
B. Leger, P. Miron and J. M. Emidio	1215	Geometric and aero-thermal influences on multiholed plate temperature: application on combustor wall
S.-S. Hsieh, G.-Z. Huang and H.-H. Tsai	1223	Nucleate pool boiling characteristics from coated tube bundles in saturated R-134a
C. H. Song, D.-Y. Lee and S. T. Ro	1241	Cooling enhancement in an air-cooled finned heat exchanger by thin water film evaporation
J. Yam, Y. Li and Z. Zheng	1251	Nonlinear coupling between thermal mass and natural ventilation in buildings
Z. Trávníček, K. Peszyński, J. Hošek and S. Wawrzyniak	1265	Aerodynamic and mass transfer characteristics of an annular bistable impinging jet with a fluidic flip–flop control
N. C. Reis Jr., R. F. Griffiths, M. D. Mantle and L. F. Gladden	1279	Investigation of the evaporation of embedded liquid droplets from porous surfaces using magnetic resonance imaging
F. Plourde and M. Prat	1293	Pore network simulations of drying of capillary porous media. Influence of thermal gradients

April, Number 8

V. A. F. Costa	1309	Unified streamline, heatline and massline methods for the visualization of two-dimensional heat and mass transfer in anisotropic media
G. Ibáñez, S. Cuevas and M. L. De Haro	1321	Minimization of entropy generation by asymmetric convective cooling
M. G. Blyth and C. Pozrikidis	1329	Heat conduction across irregular and fractal-like surfaces
J. L. Tuh and T. F. Lin	1341	Structure of mixed convective longitudinal vortex air flow driven by a heated circular plate embedded in the bottom of a horizontal flat duct

D. Maynes and B. W. Webb	1359	Fully developed electro-osmotic heat transfer in microchannels
C. H. Lan, O. A. Ezekoye, J. R. Howell and K. S. Ball	1371	Stability analysis for three-dimensional Rayleigh–Bénard convection with radiatively participating medium using spectral methods
W. Timm, K. Weinzierl and A. Leipertz	1385	Heat transfer in subcooled jet impingement boiling at high wall temperatures
R. Ghafouri-Azar, S. Shakeri, S. Chandra and J. Mostaghimi	1395	Interactions between molten metal droplets impinging on a solid surface
T. Hibiki, R. Situ, Y. Mi and M. Ishii	1409	Modeling of bubble-layer thickness for formulation of one-dimensional interfacial area transport equation in subcooled boiling two-phase flow
N. Acharya, M. Sen and E. Ramos	1425	Periodicity and bifurcations in capillary tube boiling with a concentric heating wire
X. Chen and H.-P. Li	1443	The reactive thermal conductivity for a two-temperature plasma
F. De Monte	1455	Unsteady heat conduction in two-dimensional two slab-shaped regions. Exact closed-form solution and results
H. A. M. El-Arabawy	1471	Effect of suction/injection on the flow of a micropolar fluid past a continuously moving plate in the presence of radiation
T. Hibiki, R. Situ, Y. Mi and M. Ishii	1479	Local flow measurements of vertical upward bubbly flow in an annulus
Technical Note		
J. Caldwell and Y. Y. Kwan	1497	On the perturbation method for the Stefan problem with time-dependent boundary conditions

April, Number 9

V. I. Terekhov and M. A. Pakhomov	1503	Numerical simulations of hydrodynamics and convective heat transfer in a turbulent tube mist flow
S. F. Wang, R. Mosdorf and M. Shoji	1519	Nonlinear analysis on fluctuation feature of two-phase flow through a T-junction
Y.-H. Dong, X.-Y. Lu and L.-X. Zhuang	1529	Large eddy simulation of turbulent channel flow with mass transfer at high-Schmidt numbers
J. Lewins	1541	Bejan's constructal theory of equal potential distribution
I. H. Katzarov	1545	Finite element modeling of the porosity formation in castings

J. H. Ryu, D. H. Choi and S. J. Kim 1553 Three-dimensional numerical optimization of a manifold microchannel heat sink

O. Polat and E. Bilgen 1563 Conjugate heat transfer in inclined open shallow cavities

M. Gay and E. E. Michaelides 1575 Effect of the history term on the transient energy equation for a sphere

L. B. Dantas, H. R. B. Orlande and R. M. Cotta 1587 An inverse problem of parameter estimation for heat and mass transfer in capillary porous media

R. V. Seeniraj and N. P. Kannan 1599 Magnetic field effects upon heat transfer for laminar flow of electrically conducting liquid over a melting slab

A. Służalec 1607 Thermal waves propagation in porous material undergoing thermal loading

J. You, J. Y. Yoo and H. Choi 1613 Direct numerical simulation of heated vertical air flows in fully developed turbulent mixed convection

C. W. Lan, C. Y. Tu and Y. F. Lee 1629 Effects of internal radiation on heat flow and facet formation in Bridgman growth of YAG crystals

V. Kumar, G. Biswas, G. Brenner and F. Durst 1641 Effect of thermocapillary convection in an industrial Czochralski crucible: numerical simulation

K. Ramachandran, T. Sato and H. Nishiyama 1653 3D modeling of evaporation of water injected into a plasma jet

G. L. Buchbinder 1665 Mass transfer in field of fast-moving deformation disturbance

A. Pantokratoras 1675 Laminar free-convection in glycerol with variable physical properties adjacent to a vertical plate with uniform heat flux

Chr. Boyadjiev and B. Boyadjiev 1679 On the non-stationary evaporation kinetics. I. Mathematical model and experimental data

B. Boyadjiev and Chr. Boyadjiev 1687 On the non-stationary evaporation kinetics. II. Stability

May, Number 10

T. Bello-Ochende and A. Bejan 1693 Fitting the duct to the "body" of the convective flow

M. Angioletti, R. M. Di Tommaso, E. Nino and G. Ruocco 1703 Simultaneous visualization of flow field and evaluation of local heat transfer by transitional impinging jets

M. S. Hameed and M. S. Muhammed	1715	Mass transfer into liquid falling film in straight and helically coiled tubes
K. Khanafer and A. J. Chamkha	1725	Mixed convection within a porous heat generating horizontal annulus
X. Zhang and D. K. Tafti	1737	Flow efficiency in multi-louvered fins
Y. J. Kim and A. G. Fedorov	1751	Transient mixed radiative convection flow of a micro-polar fluid past a moving, semi-infinite vertical porous plate
A. Bahloul, R. Delahaye, P. Vasseur and L. Robillard	1759	Effect of surface tension on convection in a binary fluid layer under a zero gravity environment
T. Hibiki and M. Ishii	1773	One-dimensional drift–flux model for two-phase flow in a large diameter pipe
K. A. R. Ismail and M. das Graças E. da Silva	1791	Numerical solution of the phase change problem around a horizontal cylinder in the presence of natural convection in the melt region
S. Kim, M. C. Kim and K. Y. Kim	1801	Non-iterative estimation of temperature-dependent thermal conductivity without internal measurements
F. A. Jaberi and P. J. Colucci	1811	Large eddy simulation of heat and mass transport in turbulent flows. Part 1: Velocity field
F. A. Jaberi and P. J. Colucci	1827	Large eddy simulation of heat and mass transport in turbulent flows. Part 2: Scalar field
M. S. EL-Genk and H. Bostanci	1841	Saturation boiling of HFE-7100 from a copper surface, simulating a microelectronic chip
C. Wang, J. M. Zhu, S. J. Liao and I. Pop	1855	On the explicit analytic solution of Cheng–Chang equation
S.-S. Hsieh, K.-J. Jang and H.-H. Tsai	1861	Evaporative characteristics of R-134a and R-600a in horizontal tubes with perforated strip-type inserts
K. Kessaev, R. Vidal and M. Niwa	1873	Gas jet heat release inside a cylindrical cavity
V. N. Skokov, V. P. Koverda, A. V. Reshetnikov, V. P. Skripov, N. A. Mazheiko and A. V. Vinogradov	1879	$1/f$ noise and self-organized criticality in crisis regimes of heat and mass transfer
Letter to the Editor		
A. Bejan	1885	Constructal comment on a Fermat-type principle for heat flow

May, Number 11

R. J. Goldstein, E. R. G. Eckert, W. E. Ibele, S. V. Patankar, T. W. Simon, T. H. Kuehn, P. J. Strykowski, K. K. Tamma, J. V. R. Heberlein, J. H. Davidson, J. Bischof, F. A. Kulacki, U. Kortshagen and S. Garrick	1887	Heat transfer—a review of 2001 literature
D. Albagli and A. Gany	1993	High speed bubbly nozzle flow with heat, mass, and momentum interactions
H.-P. Tan, Y. Huang and X.-L. Xia	2005	Solution of radiative heat transfer in a semitransparent slab with an arbitrary refractive index distribution and diffuse gray boundaries
R. De C. Oliveski, A. Krenzinger and H. A. Vielmo	2015	Cooling of cylindrical vertical tanks submitted to natural internal convection
D. K. Tafti and J. Cui	2027	Fin–tube junction effects on flow and heat transfer in flat tube multilouvered heat exchangers
L.-C. Fang	2039	Effect of mixed convection on transient hydrodynamic removal of a contaminant from a cavity
S. Jin Kim, J. Ki Seo and K. Hyung Do	2051	Analytical and experimental investigation on the operational characteristics and the thermal optimization of a miniature heat pipe with a grooved wick structure
M. Prud'homme and S. Jasmin	2065	Determination of a heat source in porous medium with convective mass diffusion by an inverse method
A. Y. Tong	2077	On the impingement heat transfer of an oblique free surface plane jet
Y.-M. Shen, C.-O. Ng and H.-Q. Ni	2087	3D numerical modeling of non-isotropic turbulent buoyant helicoidal flow and heat transfer in a curved open channel
X.-Z. Du and B.-X. Wang	2095	Study on transport phenomena for flow film condensation in vertical mini-tube with interfacial waves

June, Number 12

C.-D. Ho and W.-Y. Yang	2103	The influences of recycle on a double-pass laminar counterflow concentric circular heat exchangers

S. Chakraborty and P. Dutta	2115	Three-dimensional double-diffusive convection and macrosegregation during non-equilibrium solidification of binary mixtures
M. Monde, H. Arima, W. Liu, Y. Mitutake and J. A. Hammad	2135	An analytical solution for two-dimensional inverse heat conduction problems using Laplace transform
Z. Lipnicki	2149	Role of the contact layer between liquid and solid on a solidification process
A. Horvat and I. Catton	2155	Numerical technique for modeling conjugate heat transfer in an electronic device heat sink
E. Radziemska and W. M. Lewandowski	2169	Natural convective heat transfer from isothermal cuboids
D. Xie, B. D. Bowen, J. R. Grace and C. J. Lim	2179	Two-dimensional model of heat transfer in circulating fluidized beds. Part I: Model development and validation
D. Xie, B. D. Bowen, J. R. Grace and C. J. Lim	2193	Two-dimensional model of heat transfer in circulating fluidized beds. Part II: Heat transfer in a high density CFB and sensitivity analysis
Z. X. Yuan, N. Saniei and X. T. Yan	2207	Turbulent heat transfer on the stationary disk in a rotor–stator system
R. A. Handler, R. I. Leighton, G. B. Smith and R. Nagaosa	2219	Surfactant effects on passive scalar transport in a fully developed turbulent flow
H. J. Chung and H. C. No	2239	Simultaneous visualization of dry spots and bubbles for pool boiling of R-113 on a horizontal heater
M. K. Aktas and B. Farouk	2253	Numerical simulation of developing natural convection in an enclosure due to rapid heating
M. Mamou	2263	Stability analysis of the perturbed rest state and of the finite amplitude steady double-diffusive convection in a shallow porous enclosure
X. Li, J. L. Gaddis and T. Wang	2279	Mist/steam cooling by a row of impinging jets
B. K. Wiseman and J. A. Khan	2291	Evaluation of the radiative properties of a dispersed particulate medium for construction material applications

June, Number 13

C. Israel-Cookey, A. Ogulu and V. B. Omubo-Pepple	2305	Influence of viscous dissipation and radiation on unsteady MHD free-convection flow past an infinite heated vertical plate in a porous medium with time-dependent suction

C. TANGTHIENG and F. B. CHEUNG	2313	Thermosolutal transport and macrosegregation during freeze coating of a binary substance on a continuous moving object
K. SUNDARAVADIVELU and C. P. TSO	2329	Influence of viscosity variations on the forced convection flow through two types of heterogeneous porous media with iso-flux boundary condition
T. D. BENNETT	2341	Complex combination solution for radiation–conduction transport with periodic boundary conditions
R. YUN, Y. KIM, M. S. KIM and Y. CHOI	2353	Boiling heat transfer and dryout phenomenon of CO_2 in a horizontal smooth tube
A. HAJI-SHEIKH, J. V. BECK and D. AGONAFER	2363	Steady-state heat conduction in multi-layer bodies
K. PARK, K.-J. NOH and K.-S. LEE	2381	Transport phenomena in the thin-film region of a micro-channel
I. MARTORELL, J. HERRERO and F. X. GRAU	2389	Natural convection from narrow horizontal plates at moderate Rayleigh numbers
R. GRUBER and T. MELIN	2403	Mixed convection in the copper dissolution technique of studying mass transfer
L. Z. ZHANG and J. L. NIU	2415	Mass transfer of volatile organic compounds from painting material in a standard field and laboratory emission cell
A. FICHERA and A. PAGANO	2425	Modelling and control of rectangular natural circulation loops
S. LALOT and S. LECOEUCHE	2445	Online fouling detection in electrical circulation heaters using neural networks
G. ALVAREZ, P.-E. BOURNET and D. FLICK	2459	Two-dimensional simulation of turbulent flow and transfer through stacked spheres
X. ESCRIVA and A. GIOVANNINI	2471	Analysis of convective momentum and wall heat transfer: application to vortex boundary layer interaction
A. FERRIERE, C. CHAUSSAVOINE, J.-P. LEYRIS and J. HAMEURY	2485	Numerical simulation of the cooling of a hot disk rapidly subjected to combined convective and radiant heat losses
Technical Notes		
A. F. MILLS	2495	On steady one-dimensional diffusion in binary ideal gas mixtures
J.-S. YOO	2499	Dual free-convective flows in a horizontal annulus with a constant heat flux wall

J. R. Barbosa Jr., G. F. Hewitt and S. M. Richardson	2505	A note on the influence of droplet interchange on evaporation and condensation of multicomponent mixtures in annular flow
P. Sharma and C. L. Varshney	2511	Thermal dispersion effect on MHD flow of dusty gas and dust particles through hexagonal channel
		July, Number 14
	2515	In memoriam – Professor Chang-Lin Tien (1935–2002)
H. Y. Wu and P. Cheng	2519	Friction factors in smooth trapezoidal silicon microchannels with different aspect ratios
R. Yun and Y. Kim	2527	Critical quality prediction for saturated flow boiling of CO_2 in horizontal small diameter tubes
L. Gosselin and M. Lacroix	2537	Heat transfer and banks formation in a slag bath with embedded heat sources
H. Y. Wu and P. Cheng	2547	An experimental study of convective heat transfer in silicon microchannels with different surface conditions
N. Gao, H. Sun and D. Ewing	2557	Heat transfer to impinging round jets with triangular tabs
J. A. W. Gut and J. M. Pinto	2571	Modeling of plate heat exchangers with generalized configurations
T. Hibiki and M. Ishii	2587	Active nucleation site density in boiling systems
H. Y. Wu and P. Cheng	2603	Visualization and measurements of periodic boiling in silicon microchannels
H. S. Udaykumar, S. Marella and S. Krishnan	2615	Sharp-interface simulation of dendritic growth with convection: benchmarks
M. C. Kim, T. J. Chung and C. K. Choi	2629	The onset of convective instability in the thermal entrance region of plane Poiseuille flow heated uniformly from below
H. L. Wu, X. F. Peng and T. K. Chen	2637	Influence of sleeve tube on the flow and heat transfer behavior at a T-junction
H.-C. Zhou and S.-D. Han	2645	Simultaneous reconstruction of temperature distribution, absorptivity of wall surface and absorption coefficient of medium in a 2-D furnace system
P. L. Woodfield, K. Nakabe and K. Suzuki	2655	Numerical study for enhancement of laminar flow mixing using multiple confined jets in a micro-can combustor
B.-X. Wang, L.-P. Zhou and X.-F. Peng	2665	A fractal model for predicting the effective thermal conductivity of liquid with suspension of nanoparticles

F. FRANÇOIS and G. BERTHOUD 2673 Extension of the compensated distortion method to the critical heat flux modelling in rectangular inclined channel

M. MIYAMOTO, W. SHI, Y. KATOH and J. KURIMA 2685 Choked flow and heat transfer of low density gas in a narrow parallel-plate channel with uniformly heating walls

H. A. ATTIA 2695 Unsteady flow of a non-Newtonian fluid above a rotating disk with heat transfer

Ş. BILIR and A. ATEŞ 2701 Transient conjugated heat transfer in thick walled pipes with convective boundary conditions

Letter to the Editors

I. G. SHEKRILADZE 2711 Comment on the paper by H. Wang, X.F. Peng, B.X. Wang, and D.J. Lee "Jet flow phenomena during nucleate boiling" IJHMT 45 (6) (2002) 1359–1363

Announcement

2713 Microgravity Transport Processes in Fluid, Thermal, Materials, and Biological Sciences III, September 14–19, 2003, Davos, Switzerland

July, Number 15

G. P. BERETTA and E. MALFA 2715 Flow and heat transfer in cavities between rotor and stator disks

J. J. SAASTAMOINEN 2727 Heat exchange between two coupled fixed beds by fluid flow

W. QU and I. MUDAWAR 2737 Measurement and prediction of pressure drop in two-phase micro-channel heat sinks

W. QU and I. MUDAWAR 2755 Flow boiling heat transfer in two-phase micro-channel heat sinks—I. Experimental investigation and assessment of correlation methods

W. QU and I. MUDAWAR 2773 Flow boiling heat transfer in two-phase micro-channel heat sinks—II. Annular two-phase flow model

C. ZAMFIRESCU and A. BEJAN 2785 Constructal tree-shaped two-phase flow for cooling a surface

R. GRUBER and T. MELIN 2799 Radial mass-transfer enhancement in bubble-train flow

H.-T. CHEN and K.-C. LIU 2809 Effect of the potential field on non-Fickian diffusion problems in a sphere

M. WU, A. LUDWIG, A. BÜHRIG-POLACZEK, M. FEHLBIER and P. R. SAHM 2819 Influence of convection and grain movement on globular equiaxed solidification

S.-Y. HAN and J.-S. MAENG 2833 Shape optimization of cut-off in a multi-blade fan/scroll system using neural network

S. TIWARI, D. MAURYA, G. BISWAS and V. ESWARAN 2841 Heat transfer enhancement in cross-flow heat exchangers using oval tubes and multiple delta winglets

K.-K. TAN, T. SAM and H. JAMALUDIN 2857 The onset of transient convection in bottom heated porous media

W. R. FOSS, C. A. BRONKHORST and K. A. BENNETT 2875 Simultaneous heat and mass transport in paper sheets during moisture sorption from humid air

Y.-R. LI, D.-F. RUAN, N. IMAISHI, S.-Y. WU, L. PENG and D.-L. ZENG 2887 Global simulation of a silicon Czochralski furnace in an axial magnetic field

S. KUMAR, A. JAIN, B. MOHANTY and S. C. GUPTA 2899 Recirculation model of kettle reboiler

S. SAVOVIĆ and J. CALDWELL 2911 Finite difference solution of one-dimensional Stefan problem with periodic boundary conditions

Technical Note

L. H. LIU, H. P. TAN and Q. Z. YU 2917 Temperature distributions in an absorbing–emitting–scattering semitransparent slab with variable spatial refractive index

Announcements

2921 Call for Papers

2923 CHT4: 3rd ICHMT Symposium on advances in computational heat transfer

July, Number 16

R. COTTA, J. PADET, W. J. MINKOWYCZ, R. I. NIGMATULIN and W.-J. YANG 2925 Professor Sadik Kakaç on his 70th birthday

S. J. D. D'ALESSIO, M. G. SAUNDERS and D. L. HARMSWORTH 2927 Forced and mixed convective heat transfer from accelerated flow past an elliptic cylinder

S. Z. SHUJA, B. S. YILBAS and M. RASHID 2947 Confined swirling jet impingement onto an adiabatic wall

D. BRUTIN, F. TOPIN and L. TADRIST 2957 Experimental study of unsteady convective boiling in heated minichannels

Y. CERCI 2967 A new ideal evaporative freezing cycle

C.-C. WANG, I. Y. CHEN, Y.-W. YANG and Y.-J. CHANG	2975	Two-phase flow pattern in small diameter tubes with the presence of horizontal return bend
Z. J. WANG, Y. ZHOU, X. W. WANG and W. JIN	2983	A fiber-optic Bragg grating sensor for simultaneous static and dynamic temperature measurement on a heated cylinder in cross-flow
H. S. KIM, S. W. BAEK and M. J. YU	2993	Formation characteristics of nitric oxide in a three-staged air/LPG flame
B. S. DANDAPAT, B. SANTRA and H. I. ANDERSSON	3009	Thermocapillarity in a liquid film on an unsteady stretching surface
S. HOHMANN and U. RENZ	3017	Numerical simulation of fuel sprays at high ambient pressure: The influence of real gas effects and gas solubility on droplet vaporisation
A. VARGAS-ZAMORA, R. D. MORALES, M. DÍAZ-CRUZ, J. PALAFOX-RAMOS and L. GARCÍA DEMEDICES	3029	Heat and mass transfer of a convective-stratified flow in a trough type tundish
Y. ASAKO, T. PI, S. E. TURNER and M. FAGHRI	3041	Effect of compressibility on gaseous flows in micro-channels
J.-Y. KIM and T.-H. SONG	3051	Effect of tube alignment on the heat/mass transfer from a plate fin and two-tube assembly: naphthalene sublimation results
X. L. HUAI, X. F. PENG, G. X. WANG and D. Y. LIU	3061	Multi-phase flow and drying characteristics in a semi-circular impinging stream dryer
W. J. P. M. MAAS, C. C. M. RINDT and A. A. VAN STEENHOVEN	3069	The influence of heat on the 3D-transition of the von Kármán vortex street
S. C. MISHRA, P. TALUKDAR, D. TRIMIS and F. DURST	3083	Computational efficiency improvements of the radiative transfer problems with or without conduction—a comparison of the collapsed dimension method and the discrete transfer method
D. WEI and H. LUO	3097	Finite element solutions of heat transfer in molten polymer flow in tubes with viscous dissipation
R. BIERTÜMPFEL and H. BEER	3109	Natural convection heat transfer increase at the laminar–turbulent transition in the presence of instationary longitudinal vortices
A. MURATA and S. MOCHIZUKI	3119	Effect of cross-sectional aspect ratio on turbulent heat transfer in an orthogonally rotating rectangular duct with angled rib turbulators

August, Number 17

M. Rahimi, I. Owen and J. Mistry	3135	Heat transfer between an under-expanded jet and a cylindrical surface
R. C. Jones and R. L. Judd	3143	An investigation of dryout/rewetting in subcooled two-phase flow boiling
S. Y. Won, G. I. Mahmood and P. M. Ligrani	3153	Flow structure and local Nusselt number variations in a channel with angled crossed-rib turbulators
R. Nazar, N. Amin, D. Filip and I. Pop	3167	The Brinkman model for the mixed convection boundary layer flow past a horizontal circular cylinder in a porous medium
L. Consolini, S. K. Aggarwal and S. Murad	3179	A molecular dynamics simulation of droplet evaporation
A. Valencia and M. Sen	3189	Unsteady flow and heat transfer in plane channels with spatially periodic vortex generators
P. Tandon, J. P. Terrell, X. Fu and A. Rovelstad	3201	Estimation of particle volume fraction, mass fraction and number density in thermophoretic deposition systems
Y. Kamotani, L. Wang, S. Hatta, A. Wang and S. Yoda	3211	Free surface heat loss effect on oscillatory thermocapillary flow in liquid bridges of high Prandtl number fluids
F. G. F. Qin, J. C. Zhao, A. B. Russell, X. D. Chen, J. J. Chen and L. Robertson	3221	Simulation and experiment of the unsteady heat transport in the onset time of nucleation and crystallization of ice from the subcooled solution
O. Ley and Y. Bayazitoglu	3233	Effect of physiology on the temperature distribution of a layered head with external convection
V. V. Barun and A. P. Ivanov	3243	Thermal action of a short light pulse on biological tissues
J. Yin and M. K. Jensen	3255	Analytic model for transient heat exchanger response
M. J. Kermani and A. G. Gerber	3265	A general formula for the evaluation of thermodynamic and aerodynamic losses in nucleating steam flow
K. V. Dobrego, I. M. Kozlov, V. I. Bubnovich and C. E. Rosas	3279	Dynamics of filtration combustion front perturbation in the tubular porous media burner
Z. Trávníček and V. Tesař	3291	Annular synthetic jet used for impinging flow mass-transfer
V. M. Soto Francés and J. M. Pinazo Ojer	3299	Validation of a model for the absorption process of H_2O(vap) by a LiBr(aq) in a horizontal tube bundle, using a multifactorial analysis
N. Harries, J. R. Burns, D. A. Barrow and C. Ramshaw	3313	A numerical model for segmented flow in a microreactor

Y. CHAPLIA and O. CHERNUKHA 3323 Three-dimensional diffusion in a multiphase body with randomly disposed inclusions of a spherical form

August, Number 18

J. L. XU, X. Y. HUANG and T. N. WONG 3329 Study on heat driven pump. Part 1—experimental measurements

J. L. XU, T. N. WONG and X. Y. HUANG 3337 Study on heat driven pump: Part 2—Mathematical modeling

J. EL HAJAL, J. R. THOME and A. CAVALLINI 3349 Condensation in horizontal tubes, part 1: two-phase flow pattern map

J. R. THOME, J. EL HAJAL and A. CAVALLINI 3365 Condensation in horizontal tubes, part 2: new heat transfer model based on flow regimes

S. ROY and P. SAIKRISHNAN 3389 Non-uniform slot injection (suction) into steady laminar water boundary layer flow over a rotating sphere

W. NAKAYAMA 3397 A methodology to work on geometrically complex heat transfer systems: the cases of heat conduction through composite slabs

S. A. ZHUKOV, S. YU. AFANAS'EV and S. B. ECHMAEV 3411 Concerning the magnitude of the maximum heat flux and the mechanisms of superintensive bubble boiling

N. VARDAR 3429 Numerical analysis of the transient turbulent flow in a fuel oil storage tank

M. MAGHERBI, H. ABBASSI and A. BEN BRAHIM 3441 Entropy generation at the onset of natural convection

H. KALMAN 3451 Condensation of bubbles in miscible liquids

D. LÉGER and R. ASKOVIC 3465 Effect of the viscosity on the thermal transfer at early time to an impulsively started translating droplet

B. PETRE, E. DORIGNAC and J. J. VULLIERME 3477 Study of the influence of the number of holes rows on the convective heat transfer in the case of full coverage film cooling

M. FEDDAOUI, A. MIR and E. BELAHMIDI 3497 Cocurrent turbulent mixed convection heat and mass transfer in falling film of water inside a vertical heated tube

B. S. YILBAS 3511 Laser shortpulse heating of gold: variable properties case

K. ICHIMIYA and T. ABE 3521 Impingement heat transfer of a single thermal plume on the upper wall

V. A. F. COSTA, M. S. A. OLIVEIRA and A. C. M. SOUSA — 3529 — Control of laminar natural convection in differentially heated square enclosures using solid inserts at the corners

K. ZÄHRINGER, D. DUROX and F. LACAS — 3539 — Helmholtz behavior and transfer function of an industrial fuel swirl burner used in heating systems

Erratum

T. HIBIKI, R. SITU, Y. MI and M. ISHII — 3549 — Erratum to "Modeling of bubble-layer thickness for formulation of one-dimensional interfacial area transport equation in subcooled boiling two-phase flow" [International Journal of Heat and Mass Transfer 46 (2003) 1409–1423]

September, Number 19

F. AMPOFO and T. G. KARAYIANNIS — 3551 — Experimental benchmark data for turbulent natural convection in an air filled square cavity

B. F. ARMALY, A. LI and J. H. NIE — 3573 — Measurements in three-dimensional laminar separated flow

E. M. SPARROW and J. P. ABRAHAM — 3583 — A new buoyancy model replacing the standard pseudo-density difference for internal natural convection in gases

H. ZHANG and M. F. MODEST — 3593 — Multi-group full-spectrum k-distribution database for water vapor mixtures in radiative transfer calculations

G. B. KIM, J. M. HYUN and H. S. KWAK — 3605 — Transient buoyant convection of a power-law non-Newtonian fluid in an enclosure

R. HE, T. SUDA, T. FUJIMORI and J. SATO — 3619 — Effects of particle sizes on transport phenomena in single char combustion

C.-H. HUANG, I.-C. YUAN and H. AY — 3629 — A three-dimensional inverse problem in imaging the local heat transfer coefficients for plate finned-tube heat exchangers

K. KHANAFER, K. VAFAI and M. LIGHTSTONE — 3639 — Buoyancy-driven heat transfer enhancement in a two-dimensional enclosure utilizing nanofluids

M. A. H. MAMUN, W. H. LEONG, K. G. T. HOLLANDS and D. A. JOHNSON — 3655 — Cubical-cavity natural-convection benchmark experiments: an extension

M. A. ATMANE, V. S. S. CHAN and D. B. MURRAY — 3661 — Natural convection around a horizontal heated cylinder: The effects of vertical confinement

B. S. HAYNES and D. F. FLETCHER — 3673 — Subcooled flow boiling heat transfer in narrow passages

J. W. MEEWISSE and C. A. I. FERREIRA — 3683 — Validation of the use of heat transfer models in liquid/solid fluidized beds for ice slurry generation

J. P. KUBITSCHEK and P. D. WEIDMAN 3697 Stability of a fluid-saturated porous medium heated from below by forced convection

S. HUANG and C.-H. CHUN 3707 A numerical study of turbulent flow and conjugate heat transfer in concentric annuli with moving inner rod

V. A. F. COSTA and F. N. DA SILVA 3717 On the rate of evaporation of water into a stream of dry air, humidified air and superheated steam, and the inversion temperature

A. DEGIOVANNI, B. REMY and S. ANDRE 3727 Thermal resistance of a multi-constrictions contact: A simple model

September, Number 20

L. LIN and R. PONNAPPAN 3737 Heat transfer characteristics of spray cooling in a closed loop

S. K. KIM, D.-H. KIM and I. M. DANIEL 3747 Optimal control of accelerator concentration for resin transfer molding process

M. ARIK and A. BAR-COHEN 3755 Effusivity-based correlation of surface property effects in pool boiling CHF of dielectric liquids

B. FREEZE, S. SMOLENTSEV, N. MORLEY and M. ABDOU 3765 Characterization of the effect of Froude number on surface waves and heat transfer in inclined turbulent open channel water flows

P. YUAN 3777 Effect of inlet flow maldistribution on the thermal performance of a three-fluid crossflow heat exchanger

K.-S. LEE, S. JHEE and D.-K. YANG 3789 Prediction of the frost formation on a cold flat surface

B. NA and R. L. WEBB 3797 A fundamental understanding of factors affecting frost nucleation

V. S. ARPACI and H. S. LEE 3809 Microscales of saturated pool film boiling

A. K. SAHA and S. ACHARYA 3815 Parametric study of unsteady flow and heat transfer in a pin-fin heat exchanger

M. PRUD'HOMME, H. BOUGHERARA and A. BAHLOUL 3831 Convection in a vertical cavity submitted to crossed uniform heat fluxes

Y. LIU, K. S. LAU, C. K. CHAN, Y. C. GUO and W. Y. LIN 3841 Structures of scalar transport in 2D transitional jet diffusion flames by LES

I. SHNAID 3853 Thermodynamically consistent description of heat conduction with finite speed of heat propagation

P. M. COELHO, F. T. PINHO and P. J. OLIVEIRA	3865	Thermal entry flow for a viscoelastic fluid: the Graetz problem for the PTT model
I. A. HALATCHEV and J. P. DENIER	3881	The stability of boundary-layer flows under conditions of intense interfacial mass transfer: the effect of interfacial coupling
J.-Y. JUNG, J.-Y. LEE, H.-C. PARK and H.-Y. KWAK	3897	Bubble nucleation on micro line heaters under steady or finite pulse of voltage input
E. SCHALL, C. VIOZAT, B. KOOBUS and A. DERVIEUX	3909	Computation of low Mach thermical flows with implicit upwind methods
G. CAPITAINE	3927	Linear analysis of an aerothermal instability occurring in diffusion-controlled premixed catalytic combustion
Technical Notes		
A. A. GUBAIDULLIN	3935	Correlations for natural convection heat transfer in two-layer fluids with internal heat generation
M. GAD-EL-HAK	3941	Comments on "critical view on new results in micro-fluid mechanics"

October, Number 21

O. G. MARTYNENKO	3947	Heat mass transfer bibliography—CIS works
H. J. KIM, K. D. KIHM and J. S. ALLEN	3967	Examination of ratiometric laser induced fluorescence thermometry for microscale spatial measurement resolution
B. HAN and R. J. GOLDSTEIN	3975	Instantaneous energy separation in a free jet. Part I. Flow measurement and visualization
B. HAN and R. J. GOLDSTEIN	3983	Instantaneous energy separation in a free jet—Part II. Total temperature measurement
S. C. LAU, J. CERVANTES, J. C. HAN, R. J. RUDOLPH and K. FLANNERY	3991	Measurements of wall heat (mass) transfer for flow through blockages with round and square holes in a wide rectangular channel
S.-C. WANG, Y.-T. YANG and C.-K. CHEN	4003	Effect of uniform suction on laminar filmwise condensation on a finite-size horizontal flat surface in a porous medium
R. A. LAMBERT and R. H. RANGEL	4013	Solidification of a supercooled liquid in stagnation-point flow
P. POSKAS and R. POSKAS	4023	Local turbulent opposing mixed convection heat transfer in inclined flat channel for stably stratified airflow
M. M. HUSSAIN and I. DINCER	4033	Two-dimensional heat and moisture transfer analysis of a cylindrical moist object subjected to drying: A finite-difference approach

P. DENG, Y.-K. LEE and P. CHENG 4041 The growth and collapse of a micro-bubble under pulse heating

T. M. HARMS, D. LI, E. A. GROLL and J. E. BRAUN 4051 A void fraction model for annular flow in horizontal tubes

J. J. WEI and H. HONDA 4059 Effects of fin geometry on boiling heat transfer from silicon chips with micro-pin-fins immersed in FC-72

B. GOYEAU, D. LHUILLIER, D. GOBIN and M. G. VELARDE 4071 Momentum transport at a fluid–porous interface

E. HOASHI, T. YOKOMINE, A. SHIMIZU and T. KUNUGI 4083 Numerical analysis of wave-type heat transfer propagating in a thin foil irradiated by short-pulsed laser

T. TAGAWA, A. UJIHARA and H. OZOE 4097 Numerical computation for Rayleigh-Benard convection of water in a magnetic field

R. D. BOYD, M. STRAHAN, P. COFIE, A. EKHLASSI and R. MARTIN 4105 High heat flux removal using water subcooled flow boiling in a single-side heated circular channel

G. MILIAUSKAS 4119 Interaction of the transfer processes in semitransparent liquid droplets

Technical Note

S. M. S. WAHID and C. V. MADHUSUDANA 4139 Thermal contact conductance: effect of overloading and load cycling

October, Number 22

D. AMBROSINI, D. PAOLETTI and G. S. SPAGNOLO 4145 Study of free-convective onset on a horizontal wire using speckle pattern interferometry

T.-C. JEN, T. YAN and S.-H. CHAN 4157 Chemical reacting transport phenomena in a PEM fuel cell

T. A. SHEDD and T. A. NEWELL 4169 Visualization of two-phase flow through microgrooved tubes for understanding enhanced heat transfer

T. A. SHEDD, T. A. NEWELL and P. K. LEE 4179 The effects of the number and angle of microgrooves on the liquid film in horizontal annular two-phase flow

K.-H. KO and N. K. ANAND 4191 Use of porous baffles to enhance heat transfer in a rectangular channel

J. R. FINCKE, D. M. CRAWFORD, S. C. SNYDER, W. D. SWANK, D. C. HAGGARD and R. L. WILLIAMSON 4201 Entrainment in high-velocity, high-temperature plasma jets. Part I: experimental results

R. L. WILLIAMSON, J. R. FINCKE, D. M. CRAWFORD, S. C. SNYDER, W. D. SWANK and D. C. HAGGARD — 4215 — Entrainment in high-velocity, high-temperature plasma jets Part II: computational results and comparison to experiment

V. VALINČIŪTĖ, V. VALINČIUS and P. VALATKEVIČIUS — 4229 — Study of high temperature thermal boundary conditions on active surfaces of the cylinder shaped ultrasonic transducers

B. LI and D. Y. KWOK — 4235 — A lattice Boltzmann model for electrokinetic microchannel flow of electrolyte solution in the presence of external forces with the Poisson–Boltzmann equation

V. DUPONT, M. MISCEVIC, J. L. JOLY and V. PLATEL — 4245 — Boiling incipience of highly wetting liquids in horizontal confined space

C. RAMASWAMY, Y. JOSHI, W. NAKAYAMA and W. B. JOHNSON — 4257 — Semi-analytical model for boiling from enhanced structures

C.-K. CHEN and H.-P. HU — 4271 — Turbulent film condensation on a half oval body

T. BASAK — 4279 — Analysis of resonances during microwave thawing of slabs

P. HOLLMULLER — 4303 — Analytical characterisation of amplitude-dampening and phase-shifting in air/soil heat-exchangers

S. MARZOUK, H. MHIRI, S. E. GOLLI, G. LE PALEC and P. BOURNOT — 4319 — Numerical study of momentum and heat transfer in a pulsed plane laminar jet

Yu. S. TEPLITSKY, V. A. BORODULYA and E. F. NOGOTOV — 4335 — Axial solids mixing in a circulating fluidized bed

Technical Notes

W. LI — 4345 — The internal surface area basis, a key issue of modeling fouling in enhanced heat transfer tubes

D. A. NIELD — 4351 — The stability of flow in a channel or duct occupied by a porous medium

November, Number 23

K. SUZUKI, S. NISHIO, H. YOSHIDA and H. IWAI — 4355 — Heat transfer bibliography—Japanese works 2001

K. SUZUKI, S. NISHIO, H. YOSHIDA and H. IWAI — 4369 — Heat transfer bibliography—Japanese works 2002

W. Wechsatol, S. Lorente and A. Bejan	4381	Dendritic heat convection on a disc
F. Song, D. Ewing and C. Y. Ching	4393	Fluid flow and heat transfer model for high-speed rotating heat pipes
M. Burger, R. Schmehl, K. Prommersberger, O. Schäfer, R. Koch and S. Wittig	4403	Droplet evaporation modeling by the distillation curve model: accounting for kerosene fuel and elevated pressures
G. Scalabrin, L. Piazza and M. Condosta	4413	Convective cooling of supercritical carbon dioxide inside tubes: heat transfer analysis through neural networks
H. Inaba, C. Dai and A. Horibe	4427	Natural convection heat transfer of microemulsion phase-change-material slurry in rectangular cavities heated from below and cooled from above
G. Ribatski and J. M. S. Jabardo	4439	Experimental study of nucleate boiling of halocarbon refrigerants on cylindrical surfaces
J. R. Baird, D. F. Fletcher and B. S. Haynes	4453	Local condensation heat transfer rates in fine passages
H. Zeng, N. Diao and Z. Fang	4467	Heat transfer analysis of boreholes in vertical ground heat exchangers
H. Hirano, H. Ozoe and N. Okamoto	4483	Experimental study of natural convection heat transfer of air in a cube below atmospheric pressure
T. Nishimura, J. Sasaki and T. T. Htoo	4489	The structure of plumes generated in the unidirectional solidification process for a binary system
A. Barletta, S. Lazzari and E. Zanchini	4499	Non-axisymmetric forced and free flow in a vertical circular duct
J. Fukai, Y. Hamada, Y. Morozumi and O. Miyatake	4513	Improvement of thermal characteristics of latent heat thermal energy storage units using carbon-fiber brushes: experiments and modeling
K. Sefiane, L. Tadrist and M. Douglas	4527	Experimental study of evaporating water–ethanol mixture sessile drop: influence of concentration
V. I. Terekhov, N. I. Yarygina and R. F. Zhdanov	4535	Heat transfer in turbulent separated flows in the presence of high free-stream turbulence
Technical Note		
D. Couëdel, P. Rogeon, P. Lemasson, M. Carin, J. C. Parpillon and R. Berthet	4553	2D-heat transfer modelling within limited regions using moving sources: application to electron beam welding

November, Number 24

M. K. Akbar, J. Yan and S. M. Ghiaasiaan	4561	Mechanism of gas absorption enhancement in a slurry droplet containing reactive, sparingly soluble microparticles
F. H. Milanez and M. B. H. Mantelli	4573	Theoretical and experimental studies of a bi-metallic heat switch for space applications
K. Park and K.-S. Lee	4587	Flow and heat transfer characteristics of the evaporating extended meniscus in a micro-capillary channel
J. H. Nam and M. Kaviany	4595	Effective diffusivity and water-saturation distribution in single- and two-layer PEMFC diffusion medium
N. Andritsos and A. J. Karabelas	4613	Calcium carbonate scaling in a plate heat exchanger in the presence of particles
T. T. Wong, C. W. Leung, Z. Y. Li and W. Q. Tao	4629	Turbulent convection of air-cooled rectangular duct with surface-mounted cross-ribs
J. C. Hsieh, T. C. Cheng and T. F. Lin	4639	Characteristics of vortex flow in a low speed air jet impinging onto a heated disk in a vertical cylindrical chamber
M.-Y. Wen and K.-J. Jang	4657	An impingement cooling on a flat surface by using circular jet with longitudinal swirling strips
X. Z. Du and T. S. Zhao	4669	Analysis of film condensation heat transfer inside a vertical micro tube with consideration of the meniscus draining effect
D. Xiu and G. E. Karniadakis	4681	A new stochastic approach to transient heat conduction modeling with uncertainty
M. Shi, Y. Zhao and Z. Liu	4695	Study on boiling heat transfer in liquid saturated particle bed and fluidized bed
C. Debbissi, J. Orfi and S. Ben Nasrallah	4703	Evaporation of water by free or mixed convection into humid air and superheated steam
J. S. Park and S. W. Baek	4717	Interaction of a moving shock wave with a two-phase reacting medium
G. H. Wu, B. Y. Wu, S. H. Ju and C. C. Wu	4733	Non-isothermal flow of a polymeric fluid past a submerged circular cylinder
Technical Notes		
J.-S. Wu, K.-H. Hsu, P.-M. Kuo and H.-J. Sheen	4741	Evaporation model of a single hydrocarbon fuel droplet due to ambient turbulence at intermediate Reynolds numbers

J.-S. Yoo and W. W. Schultz	4747	Thermal convection in a horizontal porous layer with spatially periodic boundary temperatures: small *Ra* flow
S. M. S. Wahid	4751	Numerical analysis of heat flow in contact heat transfer

December, Number 25

Z. Zhang and C. Kleinstreuer	4755	Species heat and mass transfer in a human upper airway model
V. Chugunov, S. Fomin and T. Hashida	4769	Heat flow rate at a bore-face and temperature in the multilayer media surrounding a borehole
L. Zhao, L. Guo, B. Bai, Y. Hou and X. Zhang	4779	Convective boiling heat transfer and two-phase flow characteristics inside a small horizontal helically coiled tubing once-through steam generator
J. Yang, L. Guo and X. Zhang	4789	A numerical simulation of pool boiling using CAS model
K. Li, B. Q. Li and H. C. de Groh	4799	Effect of magnetic field on *g*-jitter induced convection and solute striation during solidification in space
C. Wang, S. Liao and J. Zhu	4813	An explicit solution for the combined heat and mass transfer by natural convection from a vertical wall in a non-Darcy porous medium
A. Behzadmehr, N. Galanis and A. Laneville	4823	Low Reynolds number mixed convection in vertical tubes with uniform wall heat flux
H. Goda, T. Hibiki, S. Kim, M. Ishii and J. Uhle	4835	Drift-flux model for downward two-phase flow
L. M. Su, S. W. Chang, C. I. Yeh and Y. C. Hsu	4845	Heat transfer of impinging air and liquid nitrogen mist jet onto superheated flat surface
S. Saravanan and P. Kandaswamy	4863	Non-Darcian thermal stability of a heat generating fluid in a porous annulus
Y. Zhang and Y. Xu	4877	Characteristics and correlations of VOC emissions from building materials
A. W. Date	4885	Fluid dynamical view of pressure checkerboarding problem and smoothing pressure correction on meshes with colocated variables
H. Chen, B. Zhang and J. Ma	4899	Theoretical and numerical analysis of convective heat transfer in the rotating helical pipes
S.-S. Hsieh, W.-C. Lai and H.-H. Tsai	4911	LDV assisted bubble dynamic parameter measurements from two enhanced tubes boiling in saturated R-134a

W. M. Lewandowski and S. Leble 4925 Study of free convective heat transfer from horizontal conic

T. Hibiki and M. Ishii 4935 One-dimensional drift-flux model and constitutive equations for relative motion between phases in various two-phase flow regimes

T. Hibiki, Y. Mi, R. Situ and M. Ishii 4949 Interfacial area transport of vertical upward bubbly two-phase flow in an annulus

Technical Notes

B. Q. Xu, Z. H. Shen, J. Lu, X. W. Ni and S. Y. Zhang 4963 Numerical simulation of laser-induced transient temperature field in film-substrate system by finite element method

J. Li, M. Li, W. Hu and D. Zeng 4969 Suppression of Marangoni convection of silicon melt by a non-contaminating method

H. Veeraraghava Raju and R. Narasimha 4975 Limiting cross-flow velocity below which heat flux is determined by natural convection laws

A. Pantokratoras 4979 Effect of viscous dissipation and pressure stress work in natural convection along a vertical isothermal plate. New results

December, Number 26

4985 Editorial

S. V. Patankar, J. P. Hartnett and W. J. Minkowycz 4987 Professor D. Brian Spalding on his eightieth birthday

Review

A.-R. A. Khaled and K. Vafai 4989 The role of porous media in modeling flow and heat transfer in biological tissues

T. Furukawa and W.-J. Yang 5005 Thermal-fluid flow in parallel boards with heat generating blocks

Y. L. Hao and Y.-X. Tao 5017 Non-thermal equilibrium melting of granular packed bed in horizontal forced convection. Part I: experiment

Y. L. Hao and Y.-X. Tao 5031 Non-thermal equilibrium melting of granular packed bed in horizontal forced convection. Part II: numerical simulation

M. Kaneda, B. Yu, H. Ozoe and S. W. Churchill 5045 The characteristics of turbulent flow and convection in concentric circular annuli. Part I: flow

J. T. Zhang and B. X. Wang 5059 Study on the interfacial evaporation of aqueous solution of SDS surfactant self-assembly monolayer

M. C. Kim, S. B. Lee, S. Kim and B. J. Chung 5065 Thermal instability of viscoelastic fluids in porous media

S.-S. Hou and J.-C. Lin	5073	The influence of preferential diffusion and stretch on the burning intensity of a curved flame front with fuel spray
H. S. Lee, H. Merte Jr., G. Picker and J. Straub	5087	Quasi-homogeneous boiling nucleation on a small spherical heater in microgravity
Q. Zhu and Y. Li	5099	Effects of pore size distribution and fiber diameter on the coupled heat and liquid moisture transfer in porous textiles
R. A. Silva and M. J. S. de Lemos	5113	Turbulent flow in a channel occupied by a porous layer considering the stress jump at the interface
L. Mao, H. S. Udaykumar and J. O. M. Karlsson	5123	Simulation of micro-scale interaction between ice and biological cells
C.-S. Tsai and C.-I. Hung	5137	Thermal wave propagation in a bi-layered composite sphere due to a sudden temperature change on the outer surface
L. Hanin and A. Campo	5145	A new minimum volume straight cooling fin taking into account the "length of arc"
J. R. Barbosa Jr., G. F. Hewitt and S. M. Richardson	5153	High-speed visualisation of nucleate boiling in vertical annular flow
Y. Qi, Y. Kawaguchi, R. N. Christensen and J. L. Zakin	5161	Enhancing heat transfer ability of drag reducing surfactant solutions with static mixers and honeycombs
T. Ficker	5175	Non-isothermal steady-state diffusion within Glaser's condensation model
	I	Volume Contents and Author Index for Volume 46, 2003